

**Catheter Systems For Crossing Total Occlusions In Vasculature**

**ABSTRACT**

5 Medical devices/methods are described that include catheter systems for crossing  
total occlusions in vasculature. The catheter systems are for use with numerous guide  
wires to direct the wires from the extraluminal or subintimal space back into a blood  
vessel lumen after the wire has entered the subintimal space. The catheter systems  
comprise a catheter body having at least one lumen configured to track over a wire. An  
10 endpiece that includes at least one port in communication with the lumen couples to the  
distal region of the catheter body. A working element is configured to deploy through the  
port for delivery from a location within the extraluminal space to locations within the  
vessel true lumen when advanced distally through the port. A distal region of the catheter  
body assumes first or second configurations when the working element is retracted into  
15 the catheter body.